

REMARKS

Amendments to the Specification

The amendments to the specification correct grammatical and typographical errors, without adding any new matter.

Claim Rejections

35 U.S.C. 102(e)

Claims 1-48

The Office Action rejected Claims 1-48 under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,680,495 to Fitzgerald ("Fitzgerald").

Claim 1 is an independent claim from which claims 2-25 depend. Applicant respectfully submits that claim 1 is allowable over Fitzgerald. In order to expedite the allowance of claim 1, it has been amended to better describe the semiconductor and substrate and now discloses a, "Group-III nitride epitaxial semiconductor device structure on a silicon carbide structure". Nowhere in Fitzgerald is there mention of a device comprising a Group-III nitride epitaxial semiconductor comprising a SiC substrate.

Claim 26 is an independent claim from which claims 27-39 depend. Applicant respectfully submits that claim 26 is allowable over Fitzgerald. In order to expedite the allowance of claim 26, it has been amended to better describe the substrate and now discloses a, "Group-III nitride epitaxial semiconductor structure on a silicon carbide substrate". Nowhere in Fitzgerald is there mention of a device comprising a Group-III nitride epitaxial semiconductor comprising a SiC substrate.

Fitzergald generally discloses a monolithic OEIC using Si as the substrate material. Nowhere does Fitzergald disclose the use of silicon carbide (SiC) as the substrate material. This is distinguishable from the inventions of claims 1, 26 and 46, where the substrate material comprises SiC. SiC is advantageous when coupled with Group-III nitride materials because it has a closer crystal lattice match to Group III nitrides. This can result in films of higher quality. Moreover, SiC has high thermal conductivity, which results in the total output power of Group III devices being unlimited by the thermal dissipation of the SiC substrate.

Moreover, Fitzergald generally discloses a structure with an optically active layer embedded in a Si wafer. The wafer consists of a Si substrate, upon which a SiGe graded layer is epitaxially grown. On top of the SiGe graded layer, a Ge layer is grown (col. 3, lines 30-39). The wafer can then be bonded to another Si substrate, at which point the original Si substrate can then be ground and selectively etched back (col. 3, lines 46-52). However, nowhere in Fitzergald is it disclosed that the etch environment etches the Si substrate faster than the SiGe graded layer and the Ge layer. Therefore, Fitzergald does not disclose an etch environment wherein the substrate is etched substantially faster than the epitaxial structure. This is distinguishable from the invention of claim 1, where, "an etch environment that etches said substrate substantially faster than said epitaxial semiconductor structure" is specifically claimed.

Claim 1 is an independent claim from which claims 2-25 depend. Claim 2 has been cancelled to avoid redundancy. As amended and for at least the reasons stated above, claim 1 is allowable. Claims 3-25 depend from claim 1 and as such are also allowable.

Claim 26 is an independent claim from which claims 27-39 depend. As amended and for at least the reasons stated above, claim 26 is allowable. Claims 27-39 depend from claim 26 and as such are also allowable.

Claim 46 is an independent claim from which claims 47-48 depend. For at least the reasons stated above, claim 46 is allowable as written. Any amendments made to claim 46 are made for the sole purpose of correcting typographical errors. Claims 47-48 depend from claim 46 and as such are also allowable.

Finally, Fitzgerald generally discloses various embodiments of a resonant cavity structure that could include a high-reflectance stack below the optoelectronic material and a high-reflectance mirror above the optoelectronic material. However, nowhere does Fitzgerald disclose the advantage of having one of the mirrors being of lower reflectivity than the other. The advantage of having the second mirror being of lower reflectivity than the first mirror is so light will exit the resonant cavity structure through the second layer. This is distinguishable from the invention of claim 40, where it is specially disclosed that the second mirror is less reflective than the first mirror.


Claim 40 is an independent claim from which claims 41-45 depend. Applicant respectfully submits that Fitzgerald does not disclose a resonant cavity structure with one mirror being less reflective than the other. Therefore, claim 40 is allowable as written. Any amendments to claim 40 are made for the sole purpose of correcting typographical errors. Claims 41-45 depend from claim 40 and as such are also allowable.

CONCLUSION

Applicants respectfully submit that all of the claims herein are allowable and request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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